water quality report

City of Redmond
Summer 2017

CityofRedmond
WASHINGTON

PWS ID 71650B

Redmond's Drinking Water– The Journey

Maintaining clean and reliable drinking water is an essential priority for Redmond. Ongoing testing and infrastructure improvements to our Redmond wells and pump stations help ensure the quality of the City's water. We are committed to protecting this valuable resource – now and for future generations.

This annual report shares the journey of Redmond's water supply, from its beginning in the Tolt River watershed to its arrival at your tap. You will find a detailed explanation on what is in our water and how Redmond's water is treated and monitored daily. This report also features information about how you can join in protecting and conserving this valuable community resource.

Thank you for your interest in Redmond's drinking water resources and conservation efforts to maintain a safe and healthy community.

- Mayor John Marchione

Information about the EPA

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and can pick up substances resulting from the presence of animal or human activity.

Substances and contaminants that could be present in source water include:

Microbes such as viruses and bacteria, which may come from septic systems, livestock, and wildlife.

Inorganic chemicals such as salts and metals, which may be naturally-occurring or result from urban stormwater runoff, wastewater discharges and farming.

Pesticides and herbicides from agriculture, urban stormwater runoff, and residential uses.

Organic chemicals both synthetic and volatile, which are by-products of industry and can also come from gas stations, dry cleaners, urban stormwater runoff and septic systems.

Radioactive contaminants, which can be naturally-occurring or result from petroleum production or mining activities.

In order to ensure the safety of tap water, the EPA regulates the amount of contaminants allowed in public drinking water. The FDA regulates the contaminants in bottled water, which must provide a similar degree of safety.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791. Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons – such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants – can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.

Where does my water come from?

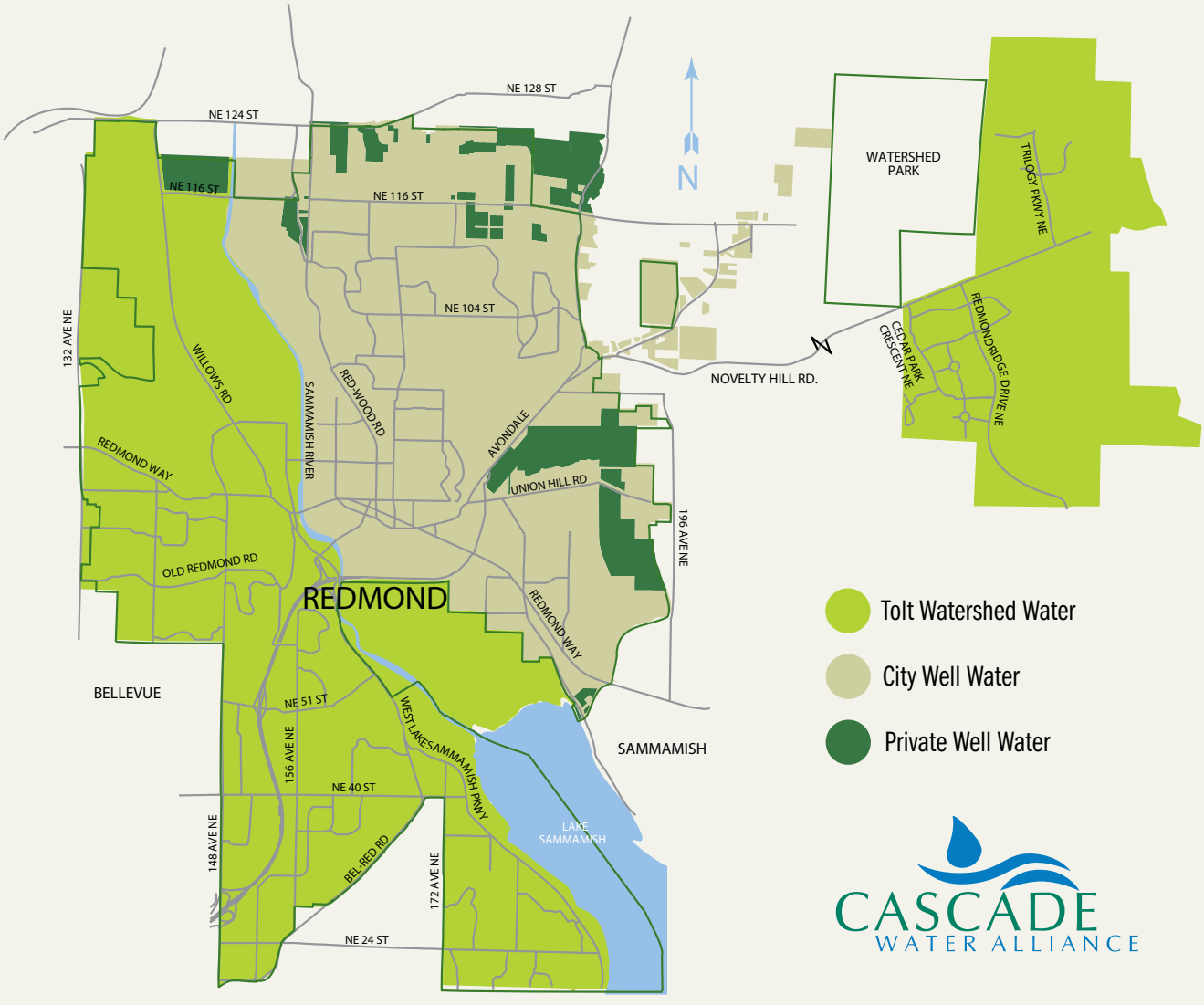
The City of Redmond has a hybrid water system. You may drink water from the Cascade Mountains or well water from an aquifer, depending on where you live.

The Tolt Watershed

Residents on the west side of Lake Sammamish and the Sammamish River, as well as those who live in Redmond Ridge and Trilogy, are served water that comes from the Tolt Watershed in the Cascade Mountains.

The Groundwater System

Residents east of Lake Sammamish and the Sammamish River drink well water from our aquifers. During the summer, water from the Tolt will be blended with the groundwater to help meet peak summer demand.



CASCADE WATER ALLIANCE

The Tolt Watershed

From the Cascades to Your Tap

The Tolt Reservoir and Watershed are located 15 miles east of Redmond in the Cascade Mountains. Rivers, streams, and snowmelt are impounded here to make up the reservoir supply. The water is filtered and treated and then travels through a supply pipeline to Redmond and other eastside water districts on its way to Seattle. The City of Seattle owns the Watershed and pipeline. Redmond, as a member of the Cascade Water Alliance, buys this water, and both Seattle and Redmond monitor and test it to maintain quality.

Watershed Protection

The Tolt Watershed covers nearly 14,000 acres and is closed to public access. Seattle's aggressive watershed protection plan safeguards the water supply from degradation and human intrusion. However, according to the State Department of Health, all surface waters in Washington State are given a contamination susceptibility rating of "high," whether or not contaminants have been detected. Contamination that might occur would most likely be from soil erosion or animal activity.

Treatment

Water treatment of the Tolt supply consists of filtration, ozonation, chlorine disinfection, and fluoridation. Calcium oxide and CO2 are added to help reduce the water's natural corrosive effect on plumbing. Filtration removes organic material and makes the water cleaner and clearer. Ozone kills tough potential pathogens like giardia and cryptosporidium.

2016 Water Quality Data – Tolt System

Detected Compounds	Units	Levels		EPA Limits		Typical Sources
		Average	Range	MCLG	MCL	
FLUORIDE	ppm	0.7	0.6 - 0.9	4	4	Additive for dental health
TURBIDITY	NTU	0.07	0.01 - 0.2	NA	TT	Soil runoff
TTHM	ppb	32.5	17.6 - 42.8	NA	80	Chlorination by-products
HAA5	ppb	34.4	19.8 - 51.1	NA	60	Chlorination by-products
CHLORINE	ppm	0.8	0.18 - 1.44	NA	4 MRDL	Additive that kills germs
BARIUM	ppm	0.0013	one sample	2.0	2.0	Erosion of natural deposits
CHROMIUM	ppm	0.0002	ND - 0.00024	0.1	0.1	Erosion of natural deposits
NITRATE	ppm	0.09	one sample	10	10	Erosion of natural deposits, septic systems and fertilizers
TOTAL COLIFORM	% positive	0%	0 out of 626	0	5%	Naturally present in environment
Untreated Water						
TOTAL ORGANIC CARBON	ppm	1.5	1.2 - 1.8	NA	TT	Naturally present in the environment
CRYPTOSPORIDIUM	#/100L	ND	ND	NA	NA	Naturally present in the environment

MCLG (maximum contaminant level goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

MRDL (maximum residual disinfectant level)

MCL (maximum contaminant level): The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

NTU (nephelometric turbidity unit) A measurement of water clarity. High turbidity can interfere with disinfection.

PPM (Parts Per Million): 1 ppm = 1 mg/l

PPB (Parts Per Billion): 1 ppb = 1 ug/l

TT (treatment technique): A required process intended to reduce the level of a contaminant in drinking water.

NA Not Applicable

Other Useful Tolt Watershed Data:

• Water Hardness = 25 mg/l or 1.42 grains per gallon. This water is soft. • pH = 7.2-9.09 (average 8.15) • Alkalinity 17.0 mg/L

A list of other contaminants that were not detected, are secondary or unregulated, is available upon request.

Seattle Public Works is required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During June 2016, they did not collect the monthly sample for bromate for the Tolt supply, and therefore cannot be sure of the quality of your drinking water during that time. Based on historical data, most bromate results for the Tolt supply are non-detect.

The Groundwater System

Redmond's Renewable Resource

East of the Sammamish River, there are underground, water-bearing formations called aquifers. For 60 years, the aquifers have supplied 35-40% of Redmond's drinking water. In 2016, the city's wells pumped over one billion gallons from the aquifers. This resource is considered to have a high vulnerability to potential contamination, because the aquifers are extremely shallow.

Groundwater Protection

In 2003, Redmond established a Wellhead Protection Program as a way to help protect our groundwater from contamination and depletion. The Wellhead Protection staff is responsible for:

- Gathering hazardous materials data and visiting businesses to help identify and eliminate sources of pollution that could contaminate groundwater.
- Reviewing development proposals to ensure that groundwater will not be adversely impacted.
- Measuring groundwater levels and collecting samples from monitoring wells throughout the city.

As a result of the Wellhead Protection Program, Redmond is in compliance with the three components of the State's Source Water Assessment Program: Protection Area Delineation, Contaminant Source Inventory, and Susceptibility Assessment. To learn more, contact Amanda Balzer at abalzer@redmond.gov or call 425-556-2753.

Treatment

Our groundwater is treated for safety and dental health with two common drinking water additives: sodium fluoride and chlorine. Chlorine acts as a safety net against disease-causing germs. The well water is adjusted for optimum pH. At most wells, we use air stripping towers, which release CO2 from the water as a way of raising the pH. At Well #4, sodium hydroxide is used. Increasing the pH makes the water less corrosive to household plumbing.

2016 Water Quality Data – Groundwater System (City Wells)

Detected Compounds	Units	Levels		EPA Limits		Typical Sources
		Average	Range	MCLG	MCL	
FLUORIDE	ppm	0.71	0.45 - 0.87	4	4	Additive for dental health
TTHM	ppb	19.5	13.7 - 26.3	NA	80	Chlorination by-products
HAA5	ppb	9.5	8.2 - 14.4	NA	60	Chlorination by-products
CHLORINE	ppm	0.65	0.15 - 1.22	NA	4 MRDL	Additive that kills germs
BARIUM	ppm	0.301	0.005 - 0.400	2.0	2.0	Erosion of Natural Deposits
CHROMIUM	ppm	0.0155	0.002 - 0.020	0.100	0.100	Erosion of Natural Deposits
NITRATE	ppm	1.0	ND - 1.9	10.0	10.0	Erosion of natural deposits, septic systems and fertilizers
TOTAL COLIFORM	% positive	0%	0 out of 622	0	5%	Naturally present in the environment

MCLG (maximum contaminant level goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

MRDL (maximum residual disinfectant level)

MCL (maximum contaminant level): The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

NA Not Applicable

NTU (nephelometric turbidity unit) A measurement of water clarity. High turbidity can interfere with disinfection.

PPB (Parts Per Billion): 1 ppb = 1 ug/l

PPM (Parts Per Million): 1 ppm = 1 mg/l

TT (treatment technique): A required process intended to reduce the level of a contaminant in drinking water.

TTHM (total trihalomethane): Disinfection by-products

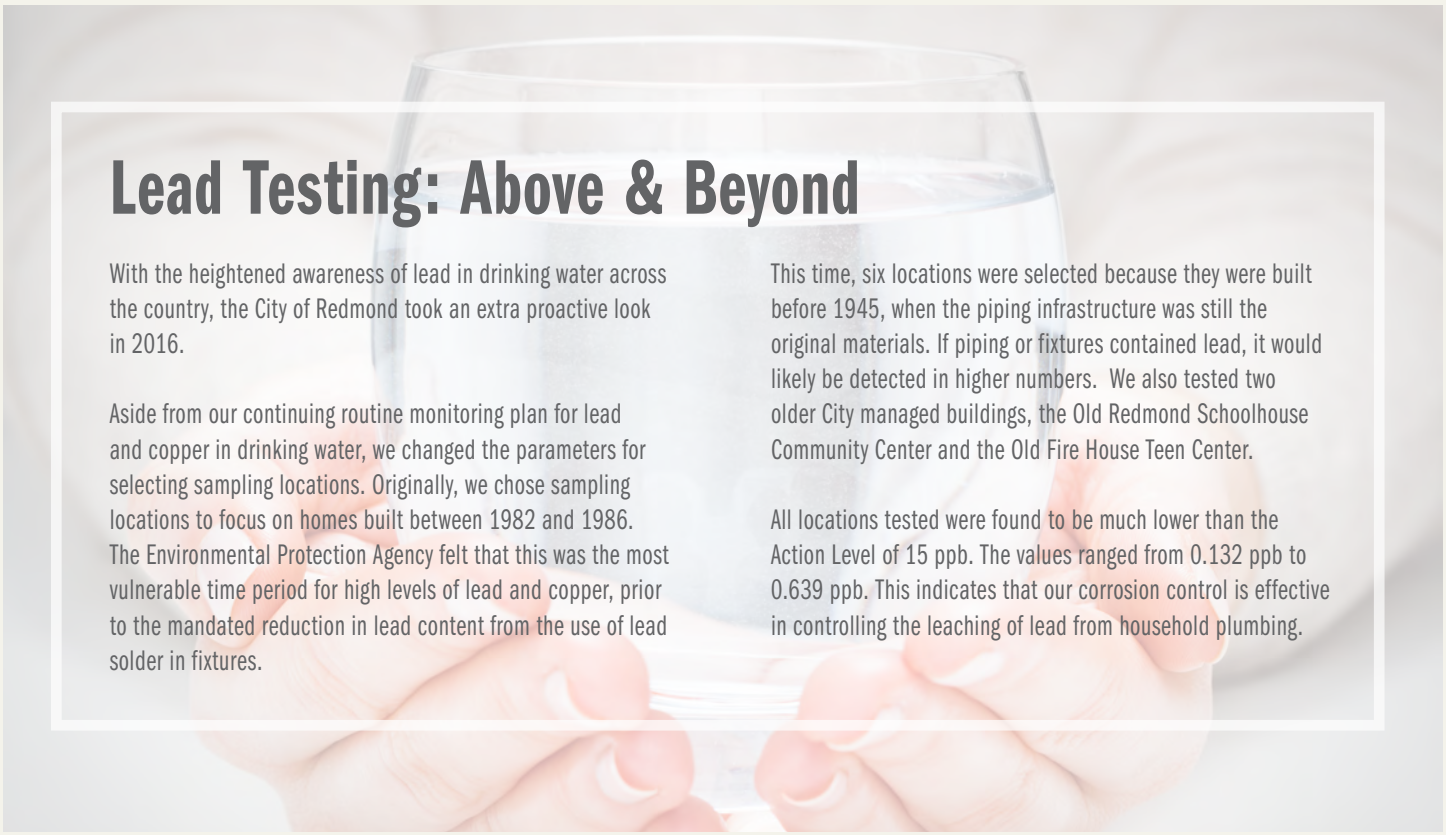
HAA5 (Haleoacetic acid): Disinfection by-products

Other Useful Groundwater Data:

- Hardness = 60-90 mg/l (4-5 grains per gallon) This water is moderately hard.
- pH = 7.11–8.01 (average 7.60)
- Alkalinity = 85-90 mg/l

A list of other contaminants that were not detected, are secondary or unregulated, is available upon request.

Keeping the lead **out.**



Lead Testing: Above & Beyond

With the heightened awareness of lead in drinking water across the country, the City of Redmond took an extra proactive look in 2016.

Aside from our continuing routine monitoring plan for lead and copper in drinking water, we changed the parameters for selecting sampling locations. Originally, we chose sampling locations to focus on homes built between 1982 and 1986. The Environmental Protection Agency felt that this was the most vulnerable time period for high levels of lead and copper, prior to the mandated reduction in lead content from the use of lead solder in fixtures.

This time, six locations were selected because they were built before 1945, when the piping infrastructure was still the original materials. If piping or fixtures contained lead, it would likely be detected in higher numbers. We also tested two older City managed buildings, the Old Redmond Schoolhouse Community Center and the Old Fire House Teen Center.

All locations tested were found to be much lower than the Action Level of 15 ppb. The values ranged from 0.132 ppb to 0.639 ppb. This indicates that our corrosion control is effective in controlling the leaching of lead from household plumbing.

2015 Lead and Copper Citywide Monitoring Program

Compounds & Units	MCLG	90th Percentile Action Level*	90th Percentile Residential Level	# of Homes Exceeding Action Level*	Sources
LEAD (ppb)	0	15 ppb	Not Detected	0 out of 31	Corrosion of household plumbing
COPPER (ppm)	1.3 ppm	1.3 ppm	Not Detected	0 out of 31	Corrosion of household plumbing

Since 1983, Redmond's drinking water has been treated to minimize corrosion in household plumbing. The current citywide monitoring program began in 1992, which tests water in homes most likely to have plumbing components containing lead. Ten of the 429 samples had exceeded the action level (15 ppb) for lead since inception of the monitoring program. In 2015, samples for lead and copper levels were again collected using the same selected homes and none were found to exceed the action levels for either contaminant. Redmond's sampling has demonstrated successful compliance with all State and Federal requirements relating to lead and copper.

Redmond's Renewable Resource

There is no detectable lead or copper in any of the sources of Redmond's drinking water. However, lead is a serious contaminant and can be found in the water of some homes due to older plumbing.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing.

The City of Redmond is responsible for providing high quality drinking water but cannot control the variety of materials used in residential and commercial plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your cold water tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested.

Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline, **800-426-4791**, or **epa.gov/safewater/lead**. You can also get information from the Redmond Water Quality Office at **425-556-2847**.

Why Protecting the Drinking Water Supply is also your responsibility

By Wednesday Smith, City of Redmond Water Quality Cross Connection Specialist

What is a cross connection?

A cross connection is a physical connection between a potable water supply and a source of contamination or pollution. This connection can be created when plumbing is installed, when using certain appliances, or even simply by attaching a hose to a faucet. Cross connections are not always easy to discover, and can pose a serious threat to water quality.

What can go wrong?

Water pressure in a building's plumbing can suddenly drop for a number of reasons. If the shower, clothes washer, dishwasher, or other water-using appliances are all using water at once, the pressure can drop. If there is high water use in the neighborhood, such as from firefighting or a water main break, the pressure in your building may drop. When water pressure suddenly changes, contaminated water can be siphoned back into your plumbing system through unprotected cross connections.

Where are cross connections found?

Cross connections can be found anywhere the public water supply connects with residential or commercial plumbing systems.
Here are some common examples of what can happen when cross connections are found:

- If a swimming pool or hot tub is filled with a garden hose submerged in the water, pool water can be sucked up the hose into the water supply.
- If a chemical dispenser, insecticide or herbicide dispenser is attached to a hose bib, a pressure drop can cause chemical-laden water to be pulled into the drinking water supply.
- If an irrigation sprinkler system lacks a proper backflow device, dirty water from the lawn can be siphoned back into the sprinkler head, and flow back into the house water supply.
- Other places where cross connections are possible include but not limited to: Fire suppression systems, dishwashers, trash chutes, hand-held showerheads, fountains, boilers, in-home water treatment systems, solar heating systems, soaking tubs in laundry areas.

What should you do to protect yourself?

Be aware of situations where your water supply does or could contact nonpotable liquid. A hose bibb (outside faucet) vacuum breaker is a simple, inexpensive plumbing device you attach to the faucet before attaching the hose. Other situations require a special backflow prevention device that will isolate potable water from potential contamination. To protect the quality of tap water:

- Never allow hoses to be submerged in sinks, pools, chemical mixing tanks, etc.
- Make sure any plumbing work is permitted and done by a licensed plumber who is knowledgeable in cross connection control.

2016 Annual Water Use

The Redmond Water Utility is pleased to provide you with its annual performance report. This report, which is required by the Washington State Department of Health (DOH) Water Use Efficiency Rule (WUE), includes information about our metering status, our distribution system leakage and progress made toward our water efficiency goals.

Metering and Distribution Leakage Summary

The Redmond water system is fully metered. The state requires that water suppliers maintain their distribution system leakage at 10% or less for a rolling 3-year average. The state recognizes that a certain amount of leakage is expected and unavoidable. The leakage is based on the total water produced by the wells and purchased from Cascade Water, less the amount of water sold to customers and used for other system purposes like flushing and firefighting. The estimated total leakage for Redmond for 2016 was 5.20% and the rolling 3-year average is 6.69%, well within the state DOH leakage standard.

Efficiency Performance Report

DOH is now allowing Cascade Water Alliance (Cascade) to establish a goal that includes all seven of its members, including Redmond. The new water efficiency goal, which must be updated every six years, was established by Cascade on December 19, 2013, for years 2014 through 2019. Cascade's goal is to achieve a cumulative drinking water savings of 600,000 gallons per day on an annual basis and 1,000,000 gallons per day during peak season (June – September) by 2020.

Cascade provides water efficiency programs and services on behalf of its members. In 2016, Cascade administered many distinct activities, including:

- Showerhead and aerator installations at commercial accounts
- Residential gardening classes
- Irrigation system upgrade rebates
- Classroom presentations on water topics
- Leak detection dye mailed to all single-family homes
- Free online ordering of shower timers, rain gauges, and other conservation items
- Water audits at King County Housing Authority properties
- Free conservation items shipped to multifamily properties
- Training for landscape contractors, parks and school district staff, and others on the fundamentals of efficient irrigation management
- Development of a WaterSense Labeled New Homes program for builders

As shown in the table below, these programs and services resulted in approximately 15,000 direct customer interactions promoting water efficiency and a savings of an estimated 257,728 gallons of water per day. Along with savings from 2014-2015, Cascade has achieved approximately 86% of its 6-year cumulative savings goal and 52% of its peak season goal.

2016 Cascade Water Efficiency Program

Community Engagement		Completed
Classroom Presentations / Students Reached		389 / 9,240
Road Shows / Customer Interactions		11 / 5,000
Water Wall Uses / Customer Interactions		9 / 2,500
Cascade Gardener Classes / Attendees		29 / 544
Garden Hotline		288
Irrigation Trainings / Attendees		11 / 220
Real Estate Conservation Trainings / Attendees		3 / 41
Single Family Water Audits / Multifamily Water Audits		14 / 2
Drip Irrigation Projects		4
Savings Generated	**Savings (Gallons/Day)**	**Completed**
Residential Clothes Washers	16,380	1,092
Residential Showerheads	164,294	12,736
Residential Aerators	35,689	3,605
Multifamily Showerheads	781	93
Multifamily Bathroom Aerators	429	66
Multifamily Ktichen Aerators	902	347
Multifamily Toilets	5,687	235
Commercial Aerators	3,225	75
Commercial Showerheads	10,320	240
PreRinse Spray Valves	411	3
Irrigation Projects	200	1
Webpage Conservation Items	1,510	1,510
Road Shows Conservation Items	17,500	17,500
Member-Provided Items	400	400
Total Savings	**257,728**	

Ever wonder why Chlorine is added to tap water?

Chlorine is added to our drinking water to provide protection from disease causing bacteria. Its disinfectant qualities have allowed communities to grow and prosper by providing safe tap water to our homes and businesses. If the odor or taste of chlorine is objectionable to you for drinking, simply fill a container and refrigerate it overnight. The chlorine will have dissipated in the morning.

Additional Information

Redmond Public Works
Water Quality Office
www.redmond.gov/environment/drinkingwater
425-556-2800

Washington Department of Health
www.doh.wa.gov/ehp/dw
800-521-0323

Environmental Protection Agency
www.epa.gov/safewater
Safe Drinking Water Hotline
800-426-4791

American Water Works Association
www.drinktap.org
www.awwa.org

Redmond Wellhead Protection Program
www.redmond.gov/environment
425-556-2701

Get Involved

It's your drinking water and your input is important. Attend and comment at City Council meetings on the first and third Tuesday of the month at 7:30 pm in the Council Chambers, located at 15670 NE 85th Street. Agendas for the meetings can be found on the City's website (www.redmond.gov) or posted in the lobbies of City Hall and the Public Safety Building.

If you have questions about this report or about your drinking water, please contact Redmond's Drinking Water Quality section at kcaldwell@redmond.gov.

Este informe contiene información muy importante sobre su agua de beber.

本报告含有饮用水问题的重要信息.

이 보고서에는 식수에 관한 중요한 정보가 담겨있습니다

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